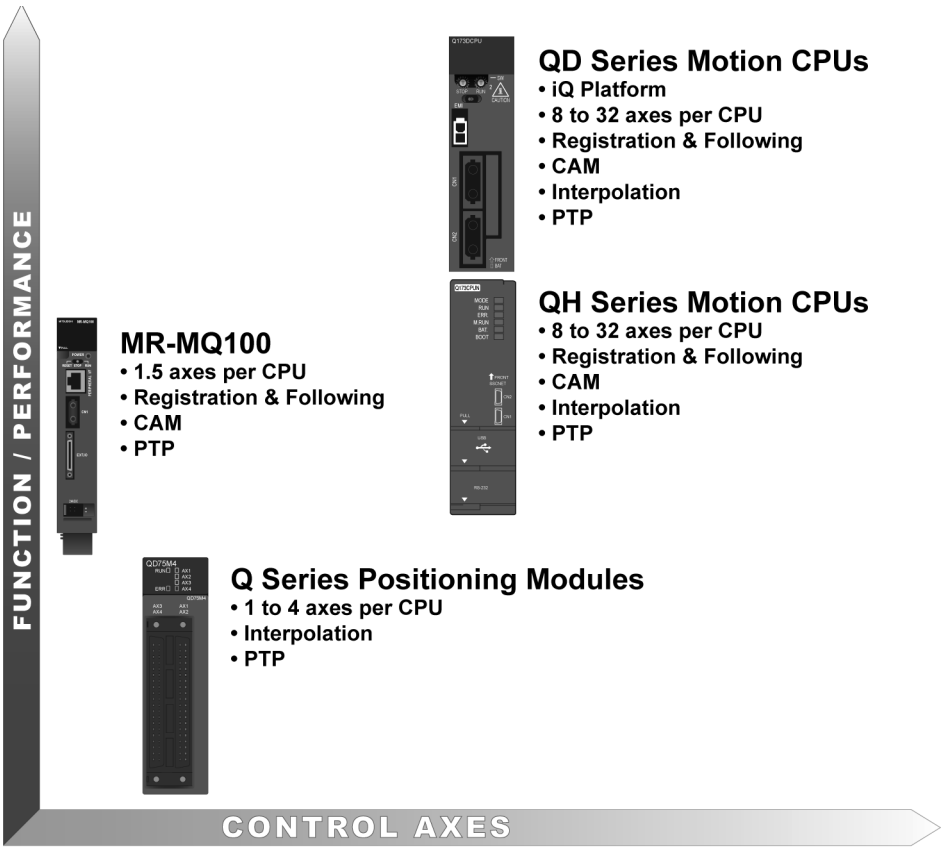
Motion Controller



QD Series for iQ Platform 194

QH Series 202

QD75MH Type PLC Positioning Modules 210

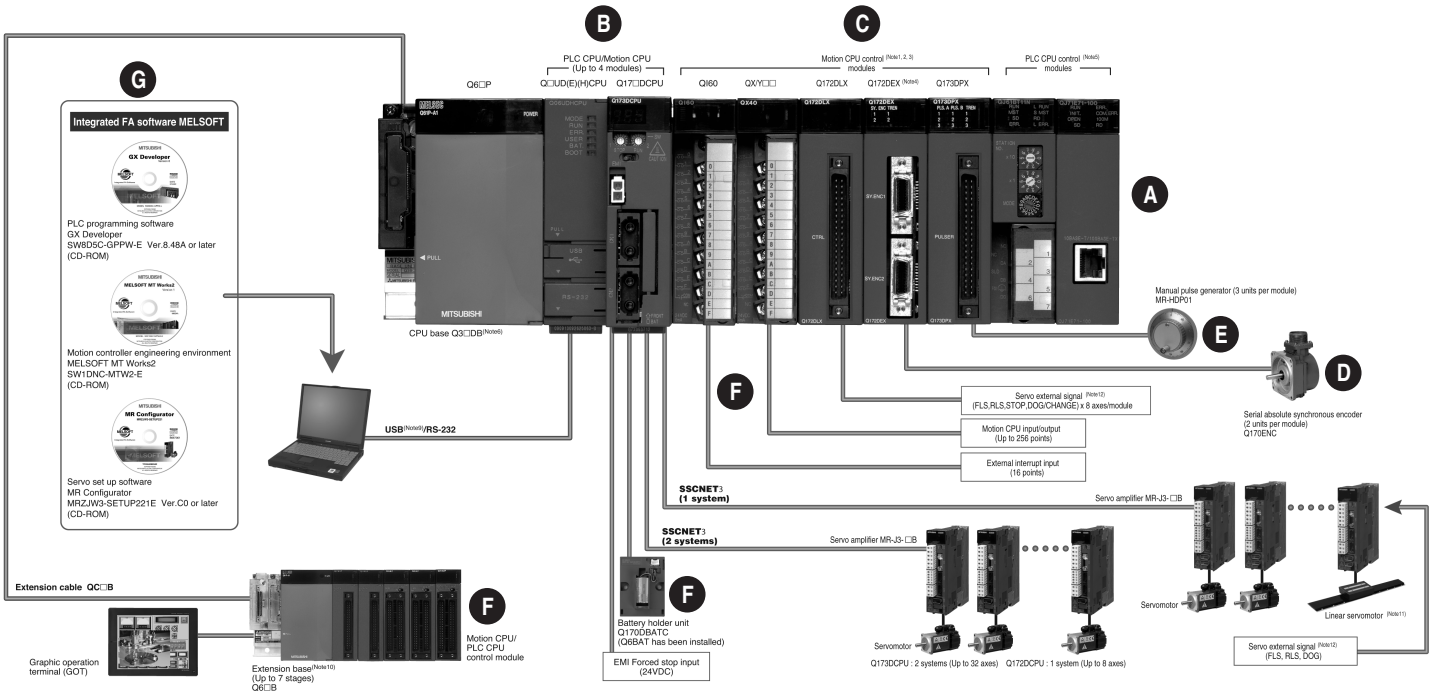
MR-MQ100 Single Axis Module 213

Stock Product: Stock product is product MEAU makes every effort to have on hand for immediate shipment. There may be instances when we are out of stock due to unexpected large requirements. All stock product will be indicated in this book by an "S" in the Stocked Item columns/rows.

Non-Stock Product: Non-stock product is product supplied on an "as-needed" basis. Standard lead times of 12 – 16 weeks apply, product is non-returnable and non-cancelable. Product listed as non-stock may change to stock product subject to increases in sales and usage. All non-stock product will be indicated in this book by a dash "–" in the Stocked Item columns/rows.

QD Series Motion Controllers for the iQ Platform

The performance of the Q172D/Q173D Motion CPUs is twice as fast as the previous generation systems resulting in shorter system times. Shared memory capacity has been increased 3.5 times, Motion SFC processing time is reduced by three-quarters, in-position signal response time has been decreased by half and programs read and write times have been increased three times when compared with Q172H/Q173H motion CPU models.



Notes:
1. Only input module among Motion CPU control modules can be accessed from PLC CPU.
2. Motion modules (Q172DLX/Q172DEX/Q173DPX) cannot be installed in CPU slot and I/O slot 0 to 2 of the main base unit.
3. Motion modules (Q172LX/Q172EX(-S2)/Q173PX) for Q17□HCPU/Q17□CPUN cannot be used.
4. Installation position of Q172DEX is only the main base unit. It cannot be used on the extension base unit.
5. Other CPU modules cannot be accessed from Motion CPU.
6. It is impossible to mount the main base unit by DIN rail when using the Motion CPU module.
7. Be sure to use the cable for forced stop input (sold separately). The forced stop cannot be released without using it.
8. Be sure to use the external battery.
9. USB cannot be used in WindowsNT 4.0.
10. Motion CPU cannot control the module installed to the QA1S6□B
11. The servo amplifiers for Linear servomotors are required.
12. Connecting target can be selected for each axis from general-purpose input of servo amplifier or Q172DLX.

A. CPU Base Unit / Power Supply Module / CPU Modules 195
B. Motion Controller CPU Modules 195
C External Signal Interface Module 196
D. Synchronous Encoder and Interface Module 197
E. Manual Pulse Generator and Interface Module 198
F. Misc Parts/Cables/Connectors/Manuals 198
G. Operating/Programming Software 201

Ⓐ iQ Series Base Units

Model Number	Q38DB	Q312DB	Q63B	Q65B	Q68B	Q612B
Type	Base Unit		Extension Base Unit			
Specifications and Extension Connection Cables	See iQ section of this PSG for detailed information and specifications					

Power Supply Modules

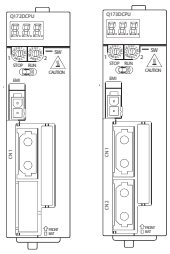
Model Number	Q61P-A1	Q61P-A2	Q61P	Q62P	Q63P	Q64P
Specifications	See iQ section of this PSG for detailed information and specifications					

Sequence CPU Modules

Model Number	Q03UDCPU	Q04UDHCPU	Q06UDHCPU	Q13UDHCPU	Q26UDHCPU	Q03UDECPU	Q04UDEHCPU	Q06UDEHCPU	Q13UDEHCPU	Q26UDEHCPU
Specifications	See iQ section of this PSG for detailed information and specifications									

Cables for CPU to Extension Base Unit or Extension Base Unit to Extension Base Unit

Model Number	QC05B	QC06B	QC12B	QC30B	QC50B	QC100B
Specifications	See iQ section of this PSG for detailed information and specifications					



Ⓑ Motion Controller CPU Modules

Specifications

Model Number		Q173DCPU	Q172DCPU
Stocked Item		S	S
Number of Control Axes		Up to 32 axes	Up to 8 axes
Operation Cycle (Default)	SV13	0.44ms / 1 to 6 axes 0.88m / 7 to 18 axes 1.77ms / 19 to 32 axes	0.44ms / 1 to 6 axes 0.88ms / 7 to 8 axes
	SV22	0.44ms / 1 to 4 axes 0.88ms / 5 to 12 axes 1.77ms / 13 to 28 axes 3.55ms / 29 to 32 axes	0.44ms / 1 to 4 axes 0.88ms / 5 to 8 axes
Interpolation Functions		Linear interpolation (Up to 4 axes), Circular interpolation (2 axes), Helical interpolation (3 axes)	
Control Modes		PTP(Point to Point) control, Speed control, Speed-position control, Fixed-pitch feed, Constant speed control, Position follow-up control, Speed control with fixed position stop, Speed switching control, High-speed oscillation control, Synchronous control (SV22)	
Acceleration/ Deceleration Control		Automatic trapezoidal acceleration/deceleration, S-curve acceleration/deceleration	
Compensation		Backlash compensation, Electronic gear, Phase compensation (SV22)	
Programming Language		Motion SFC, Dedicated instruction, Mechanical support language (SV22)	
Servo Program Capacity		14k steps	
Number of Positioning Points		3200 points (Positioning data can be designated indirectly)	
Peripheral I/F		Via PLC CPU (USB/RS-232)	
Home Position Return Function		Proximity dog type (2 types), Count type (3 types), Data set type (2 types), Dog cradle type, Stopper type (2 types), Limit switch combined type (Home position return retry function provided, home position shift function provided)	
JOG Operation Function		Provided	
Manual Pulse Generator Operation Function		Possible to connect 3 modules	
Synchronous Encoder		Possible to connect 12 modules	Possible to connect 8 modules
M-Code Function		M-code output function provided M-code completion wait function provided	
Limit Switch Output Function		Number of output points 32 points Watch data: Motion control data/Word device	
Absolute Position System		Made compatible by setting battery to servo amplifier. (Possible to select the absolute data method or incremental method for each axis)	
Number of SSCNET III Systems (*1)		2 systems	1 system
Motion Related Interface Module		Q172DLX : 4 modules usable Q172DEX : 6 modules usable Q173DPX : 4 modules usable (*2)	Q172DLX : 1 module usable Q172DEX : 4 modules usable Q173DPX : 3 modules usable (*2)
Internal Current		1.14	1.25
Dimensions (W x D x H) mm (in)		27.4 x 98 x 119.3 (1.08 x 3.86 x 4.70)	
Weight (kg)		0.33	0.33

Notes:

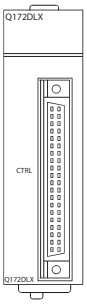
1. The MR-J2S-B servo amplifiers for SSCNET cannot be used.

2. When using the incremental synchronous encoder (SV22 use), you can use above number of modules. When connecting the manual pulse generator, you can use only 1 module.

C External Signal Interface Module

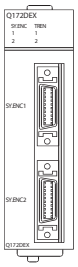
Servo External Signal	Application	Number of Points
Upper Stroke Limit Input (FLS)	For detection of upper and lower stroke limits	32 points (4 points/8 axes)
Lower Stroke Limit Input (RLS)		
Stop Signal Input (STOP)	For stopping under speed or positioning control	
Proximity DOG/ Speed-Position Switching Input (DOG/CHANGE)	For detection of proximity DOG at proximity DOG or count type home position return or for switching from speed to position switching control.	

Note: Signal No. 1 to 8 can be assigned to the specified axis. To make the assignment, use the system settings of the positioning software package.



Model Number		Q172DLX
Stocked Item		S
Number of Inputs		Servo external signals: 32 points (Upper stroke limit, Lower stroke limit, Stop input, Proximity DOG/Speed-position switching signal) (4 points x 8 axes)
Input Method		Sink/Source type
Isolation Method		Photocoupler
Rated Input Voltage		12/24 VDC
Rated Input Current		12 VDC 2mA/24 VDC 4mA
Operating Voltage Range		10.2 to 26.4 VDC (12/24 VDC +10/ -15%, ripple ratio 5% or less)
ON Voltage/Current		10 VDC or more/2.0mA or more
OFF Voltage/Current		1.8 VDC or less/0.18mA or less
Input Resistance		Approx. 5.6KΩ
Response time of the Upper/Lower Stroke Limit and STOP Signal	OFF to ON	1ms
	ON to OFF	
Response Time of the Proximity DOG, Speed-Position Switching Signal	OFF to ON	0.4ms/0.6ms/1ms (CPU parameter setting, Default 0.4ms)
	ON to OFF	
Common Terminal Arrangement		32 points/common (common terminal: B1, B2)
Indicates to Display		ON indication (LED)
External Connector Type		40 pin connector
Applicable Wire Size		0.3mm^2
Applicable Connector for the External Connection		A6CON1 (Attachment), A6CON2, A6CON3 (Optional)
Applicable Connector/ Terminal Block Converter Module		A6TBXY36, A6TBXY54, A6TBXY70 (Optional)
Number of I/O Occupying Points		32 points (I/O allocation: Intelligent, 32 points)
Internal Current Consumption (5VDC) [A]		0.06
Dimensions [mm (inch)] (W x H x D)		27.4 x 98 x 90 (1.08 x 3.86 x 3.54)
Weight (kg)		0.15

Ⓓ QD Series Serial Absolute Synchronous Encoder and Interface Module



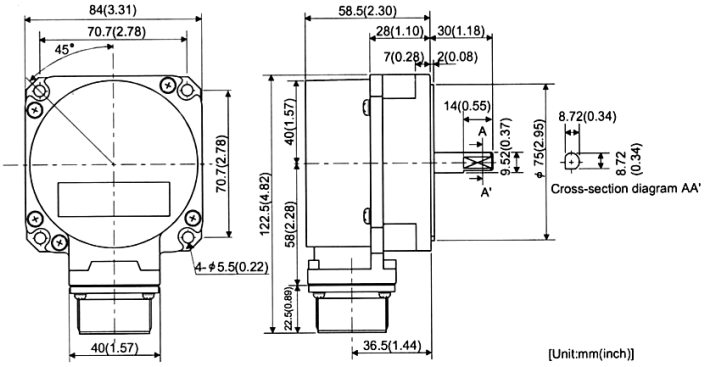
Tracking Enable Signal Input

Model Number		Q172DEX
Stocked Item		S
Number of Inputs		Tracking enable signal: 2 points
Input Method		Sink/Source type
Isolation Method		Photocoupler
Rated Input Voltage		12/24 VDC
Rated Input Current		12 VDC 2mA/24 VDC 4mA
Operating Voltage Range		10.2 to 26.4 VDC (12/24 VDC +10 / -15%, ripple ratio 5% or less)
ON Voltage/Current		10 VDC or more/2.0mA or more
OFF Voltage/Current		1.8 VDC or less/0.18mA or less
Input Resistance		Approx. 5.6KΩ
Response Time	OFF to ON	0.4ms/0.6ms/1ms (CPU parameter setting, Default 0.4ms)
	ON to OFF	
Common Terminal Arrangement		1 point/common (Common terminal: TREN.COM)
Display		ON indication (LED)

Serial Absolute Synchronous Encoder I/F

Model Number	Q172DEX
Applicable Signal Types	Differential-output type : (SN75C1168 or equivalent)
Transmission Method	Serial communications
Synchronous Method	Counter-clock-wise (viewed from end of shaft)
Communication Speed	2.5 Mbps
Applicable Types	Q170ENC
Position Detection Method	Absolute (ABS) method
Resolution	262144 PLS/rev (18bit)
Number of Modules	2/module
External Connector Type	20 pin connector
Applicable Connector for the External Connection	Q170ENCCNS (Optional)
Applicable Wire	MB14B0023 12 Pair
Recommended Cables	Q170ENCCBL☐M ☐= cable length 2m (6.56 ft.), 5m (16.4 ft.), 10m (32.81 ft.), 20m (65.62 ft.), 30m (98.43 ft.), 50m (164.04 ft.) (Note)
Cable Length	Up to 50m (164.04 ft.)
Back up the Absolute Position	Depends on A6BAT/MR-BAT
Battery Service Life Time (Value in Actual)	12000 [h], (Example of encoders x 2, ambient temperature 40°C (104°F)) 24000 [h], (Example of encoders x 1, ambient temperature 40°C (104°F))
Memory of Data Exchange	None
Number of I/O Occupying Points	32 points (I/O allocation: Intelligent, 32 points)
Internal Current Consumption (5VDC) [A]	0.19
Dimensions [mm (inch)]	98 x 27.4 x 90 (3.86 x 1.08 x 3.54) H x W x D
Weight [kg]	0.15

Note: Use these cables when the tracking enable signal is not used. Customer must make a cable when the tracking enable signal is used.



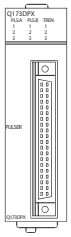
QD Series Synchronous Encoder (optional)

Model Number	Q170ENC
Stocked Item	S
Resolution	262144 PLS/rev
Transmission Method	Serial Communications (Connected to Q172EX-S2/S3)
Direction on Increase	Counter clockwise (viewed from end of shaft)
Protective Construction (*1)	IP65 (dust proof, waterproof) except for the shaft-through portion
Permitted Speed at ON	3600 r/min
Permitted Speed at OFF (*2)	500 r/min
Permitted Axis Load	Radial load: Max 19.6N Thrust load: Max 9.8N
Runout at Input Shaft Tip	0.02 mm (0.00079 in) or less 15 mm (0.59 in) from tip
Recommended Coupling	Bellows coupling
Permissible Angular Acceleration	40,000 rad/s^2
Internal Current Consumption	0.2 (A)
Connecting Cable	Q170ENCCBL☐M ☐ = cable length 2m (6.56 ft.), 5m (16.4 ft.), 10m (32.8 ft.), 20m (65.6 ft.), 30m (98.4 ft.), 50m (164.04 ft.)]
Communication Method	Differential driver/receiver conforming to RS-422A
Transmission Distance	Up to 50 m (164.04 ft)
Operating Temperature	-5°C to 55°C (23 to 131°F)
Weight kg (lbs)	0.6 (1.3)

Notes:

1. If an "o-ring" is required, please purchase separately.
2. If it exceeds a permitted speed at power OFF, a position displacement is generated.

E QD Series Manual Pulse Generator and Interface Module



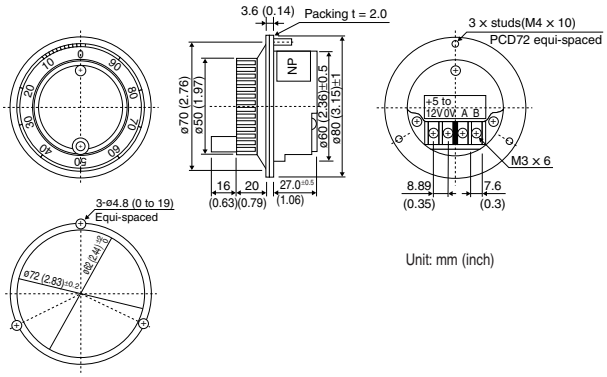
Tracking Enable Signal Input

Model Number	Q173DPX
Stocked Item	S
Number of Inputs	Tracking enable signal: 3 points
Input Method	Sink/Source type
Isolation Method	Photocoupler
Rated Input Voltage	12/24 VDC
Rated Input Current	12 VDC 2mA/24 VDC 4mA
Operating Voltage Range	10.2 to 26.4 VDC (12/24 VDC +10/ -15%, ripple ratio 5% or less)
ON Voltage/Current	10 VDC or more / 2.0 mA or more
OFF Voltage/Current	1.8 VDC or less / 0.18 mA or less
Input Resistance	Approx. 5.6KΩ
Common Terminal Arrangement	1 point/common (Common terminal: TREN.COM)
Display	ON indication (LED)

Serial Absolute Synchronous Encoder I/F

Model Number		Q173DPX
Stocked Item		S
Number of Modules (Max.)		3 per CPU
Voltage-output/ Open collector	High Voltage	3.0 to 5.25 VDC
	Low Voltage	0 to 1.0 VDC
Differential-Output Type (26LS31 or Equivalent)	High Voltage	2.0 to 5.25 VDC
	Low Voltage	0 to 0.8 VDC
Input Frequency		Max. 200kpps (After magnification by 4)
Applicable Types		Voltage-output type/Open-collector type (5 VDC), Recommended product: MR-HDP01; Differential-output type: (26LS31 or equivalent)
External Connector Type		40 pin connector
Applicable Wire Size		0.3mm^2
Applicable Connector for the External Connection		A6CON1 (Attachment) A6CON2, A6CON3 (Optional)
Applicable Connector/ Terminal Block Converter Module		A6TBXY36, A6TBXY54, A6TBXY70 (Optional)
Cable Length	Voltage-Output/Open Collector Output Type	30m (98.43 ft.) (Open collector output type: 10m (32.81 ft.))
	Differential-Output Type	
Number of I/O Occupying Points		32 points (I/O allocation: Intelligent, 32 points)
Internal Current Consumption		0.38
Dimensions mm (inch)		98 x 27.4 x 90 (3.86 x 1.08 x 3.54) H x W x D
Weight (kg)		0.15

Manual Pulse Generator



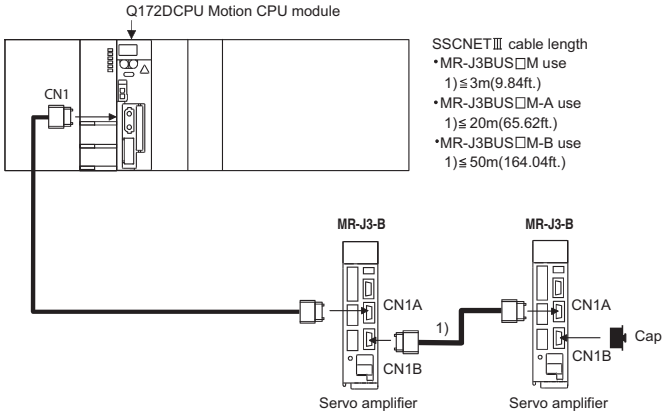
QD Series Manual Pulse Generator (optional)

Model Number	MR-HDP01
Stocked Item	S
Pulse Resolution	25 PLS/rev (100 PLS/rev at magnification of 4)
Output Method	Voltage - output (power supply voltage - 1V or more), Output current = Up to 20 mA
Power Supply Voltage	4.5 to 13.2 VDC
Consumption Current	60
Life	1,000,000 revolutions at 200 r/min
Permitted Axis Load	Radial load : Max. 19.6N Thrust load : Max. 9.8N
Pulse Signal Status	2 signals: A phase, B: phase, 90° phase difference
Friction Torque	0.1N/m (at 20°C (68°F))
Operating Temperature	-10°C to +60°C (14°F to 140°F)
Weight kg (lbs)	0.4 (0.88)

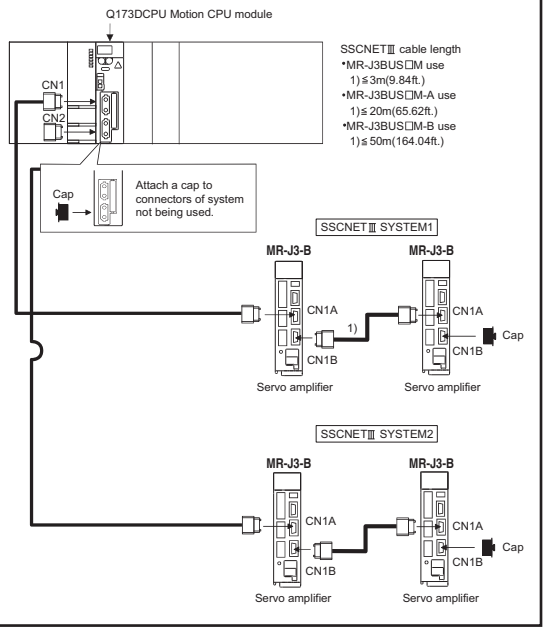
Note: If using an external power supply, it needs to be 5 VDC.

F QD Misc. Parts • Cables • Connectors • Manuals

Connection between Q172DCPU and MR-J3-B Series Servo Amplifiers



Connection between Q173DCPU and MR-J3-B Series Servo Amplifiers



Miscellaneous Parts

Model Number	Description	Stocked Item
HMI	Please select the HMI from the GOT1000 series in this Product Selection Guide	N/A
Q170DBATC	Battery holder for Q6BAT (Battery Not Included)	S
Q6BAT	Battery for memory data backup of SRAM built-in Motion CPU	S
A6BAT	Battery for data backup of the Q170ENC	S
Q170DBATCBL05M	Cable between Q170DBATC holder and Motion CPU (0.5 Meters)	S
MR-J3USBCBL3M	USB cable from PC to PLC CPU	S
SC09	RS232 cable from PC to PLC CPU	S

Cables for Q172DCPU/Q173DCPU to MR-J3-B Servo Amplifiers

Model Number	Description	Stocked Item
MR-J3BUS015M	0.15 meter SSCNET III (plastic) cable from Q172D/173DCPU to MR-J3-B Amplifier	S
MR-J3BUS03M	0.3 meter SSCNET III (plastic) cable from Q172D/173DCPU to MR-J3-B Amplifier	S
MR-J3BUS05M	0.5 meter SSCNET III (plastic) cable from Q172D/173DCPU to MR-J3-B Amplifier	S
MR-J3BUS1M	1 meter SSCNET III (plastic) cable from Q172D/173DCPU to MR-J3-B Amplifier	S
MR-J3BUS3M	3 meter SSCNET III (plastic) cable from Q172D/173DCPU to MR-J3-B Amplifier	S
MR-J3BUS5M-A	5 meter SSCNET III (plastic) cable from Q172D/173DCPU to MR-J3-B Amplifier	S
MR-J3BUS10M-A	10 meter SSCNET III (plastic) cable from Q172D/173DCPU to MR-J3-B Amplifier	S
MR-J3BUS20M-A	20 meter SSCNET III (plastic) cable from Q172D/173DCPU to MR-J3-B Amplifier	S
MR-J3BUS30M-B	30 meter SSCNET III (glass) cable from Q172D/173DCPU to MR-J3-B Amplifier	S
MR-J3BUS40M-B	40 meter SSCNET III (glass) cable from Q172D/173DCPU to MR-J3-B Amplifier	—
MR-J3BUS50M-B	50 meter SSCNET III (glass) cable from Q172D/173DCPU to MR-J3-B Amplifier	—

Cables and Connectors for Special Function Modules

Model Number	Description	Stocked Item
A6CON1	Q173DPX connector to use the manual pulse generator and incremental synchronous encoder or Q172DLX connector to use the servo external input signals.	S
QD75MCBL-2M	2 meter I/O pigtail cable to use in place of the A6CON1 connector.	S
QD75MCBL-5M	5 meter I/O pigtail cable to use in place of the A6CON1 connector.	S
QD75MCBL-10M	10 meter I/O pigtail cable to use in place of the A6CON1 connector.	S
A6TBXY36	Q172DLX Terminal Block Conversion Module - Sink Type I/O (Standard Type)	S
A6TBXY54	Q172DLX Terminal Block Conversion Module - Sink Type I/O (2-Wire Type)	—
A6TBX70	Q172DLX Terminal Block Conversion Module - Sink Type I/O (3-Wire Type)	—
AC05TB	0.5 Meter cable from Q172DLX to A6TBX□ □ □ Terminal Block Conversion Module	S
AC10TB	1 Meter cable from Q172DLX to A6TBX□ □ □ Terminal Block Conversion Module	S
AC20TB	2 Meter cable from Q172DLX to A6TBX□ □ □ Terminal Block Conversion Module	S
AC30TB	3 Meter cable from Q172DLX to A6TBX□ □ □ Terminal Block Conversion Module	S
AC50TB	5 Meter cable from Q172DLX to A6TBX□ □ □ Terminal Block Conversion Module	S
AC80TB	8 Meter cable from Q172DLX to A6TBX□ □ □ Terminal Block Conversion Module	—
AC100TB	10 Meter cable from Q172DLX to A6TBX□ □ □ Terminal Block Conversion Module	—
Q170ENCCNS	Connector set for the Q170ENC absolute synchronous encoder	—
Q170ENCCBL2M	2 meter cable from the Q172DEX to the Q170ENC absolute synchronous encoder	S
Q170ENCCBL5M	5 meter cable from the Q172DEX to the Q170ENC absolute synchronous encoder	S
Q170ENCCBL10M	10 meter cable from the Q172DEX to the Q170ENC absolute synchronous encoder	S
Q170ENCCBL20M	20 meter cable from the Q172DEX to the Q170ENC absolute synchronous encoder	—
Q170ENCCBL30M	30 meter cable from the Q172DEX to the Q170ENC absolute synchronous encoder	—
Q170ENCCBL50M	50 meter cable from the Q172DEX to the Q170ENC absolute synchronous encoder	—

Cables for Forced Stop Input Connector (EMI)

Model Number	Description	Stocked Item
Q170DEMICBL05M	0.5 Meter cable for EMI connector on CPU	S
Q170DEMICBL1M	1 Meter cable for EMI connector on CPU	S
Q170DEMICBL3M	3 Meter cable for EMI connector on CPU	S
Q170DEMICBL5M	5 Meter cable for EMI connector on CPU	S
Q170DEMICBL10M	10 Meter cable for EMI connector on CPU	S
Q170DEMICBL15M	15 Meter cable for EMI connector on CPU	S
Q170DEMICBL20M	20 Meter cable for EMI connector on CPU	S
Q170DEMICBL25M	25 Meter cable for EMI connector on CPU	S
Q170DEMICBL30M	30 Meter cable for EMI connector on CPU	S

Manuals

Model Number	Description	Stocked Item
IB(NA)0300133	Q173DCPU/Q172DCPU User's Manual	Meau.com
IB(NA)0300134	Q173DCPU/Q172DCPU Programming Manual (Common)	Meau.com
IB(NA)0300135	Q173DCPU/Q172DCPU Programming Manual (Motion SFC)	Meau.com
IB(NA)0300136	Q173DCPU/Q172DCPU Programming Manual (Real Mode)	Meau.com
IB(NA)0300137	Q173DCPU/Q172DCPU Programming Manual (Virtual Mode)	Meau.com
SH(NA)030051	MR-J3-B servo amplifier instruction manual	Meau.com
SH(NA)030041	MR-J3 servo motor instruction manual	Meau.com

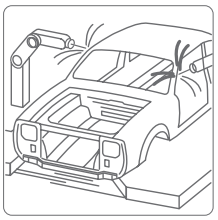
G Operating / Programming Software

MT Developer Software

Conveyor assembly use Motion SFC compatible SV13

Dedicated language

SW8DNC-SV13QB (Q173DCPU)
SW8DNC-SV13QD (Q172DCPU)



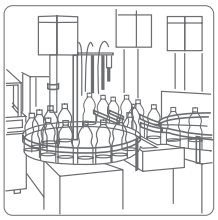
Electronic component assembly, Inserter, Feeder, Molder, Conveying equipment, Paint applicator, Chip mounting, Wafer slicer, Loader/Unloader, Bonding machine, X-Y table

Linear interpolation (1 to 4 axes), Circular interpolation, Constant-speed, Fixed-pitch feed, Speed control with fixed position stop, Speed switching, Speed control, Speed/position switching

Automatic machinery use Motion SFC compatible SV22

Mechanical support language

SW8DNC-SV22QA (Q173DCPU)
SW8DNC-SV22QC (Q172DCPU)



Press feeder, Food processing, Food packaging, Winding machine, Spinning machine, Textile machine, Printing machine, Book binder, Tire molder, Paper-making machine

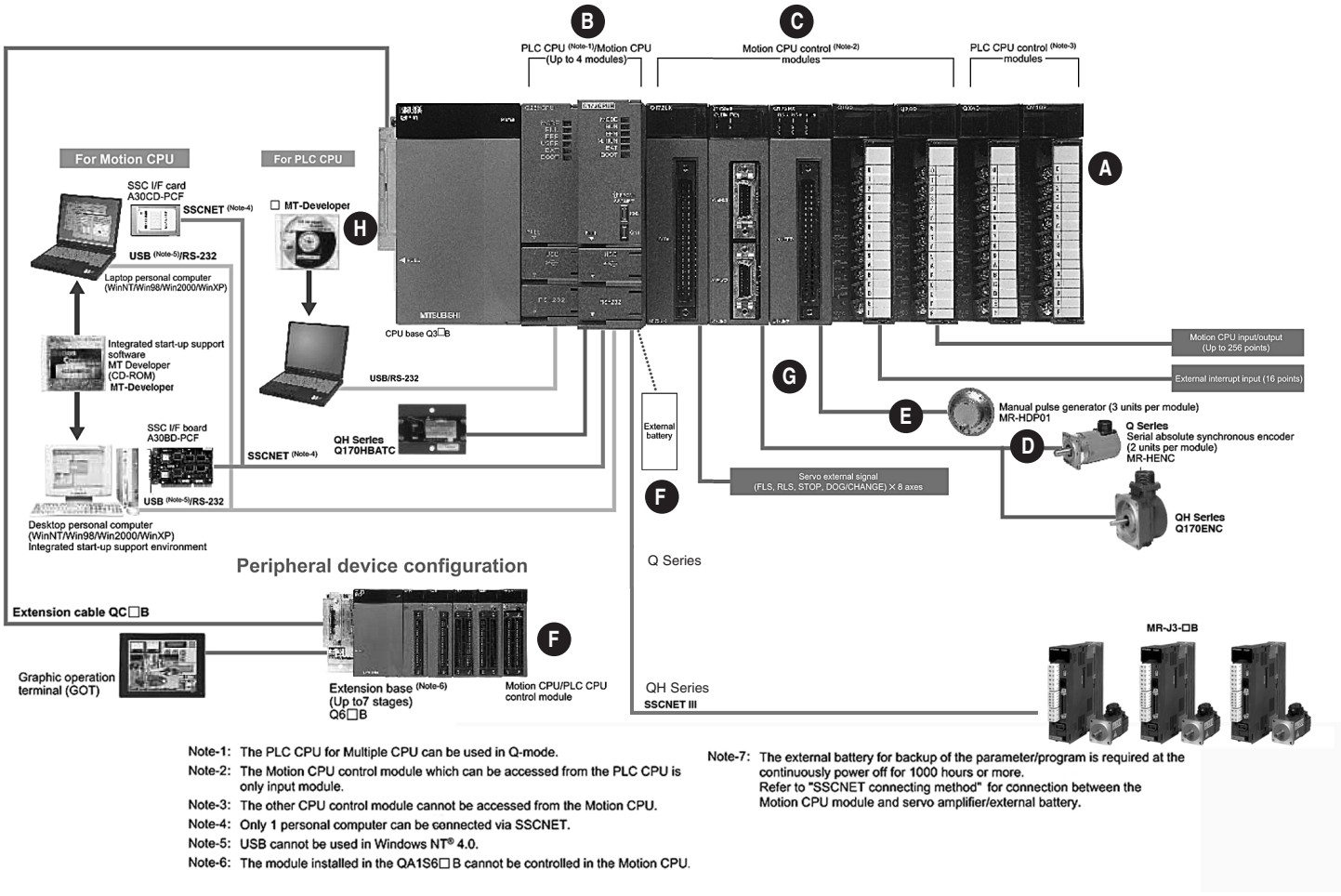
Synchronous control, Electronic shaft, Electronic clutch, Electronic cam, Draw control

Q Series Integrated Start-up Support Software Packages

Model Number	Stocked Item	Description	Details
MT-DEV2-C1	S	SW1DNC-MTW2-E (Integrated start-up support software)	Conveyor assembly software Automatic machinery software Cam data creation software Digital oscilloscope software Document print software Help section
		QD Series Q172DCPU (SSCNET III) Operating Software (OS)	SW8DNC-SV13QD: For conveyor assembly
			SW8DNC-SV22QC: For automatic machinery
		QD Series Q173DCPU (SSCNET III) Operating Software (OS)	SW8DNC-SV13QB: For conveyor assembly
			SW8DNC-SV22QA: For automatic machinery
		Single user license – can be used on 1 computer at a time; Installation manual included	
MT-DEV2-C5	–	5 user license – can be used on up to 5 computers at a time	
MT-DEV2-C10	–	10 user license – can be used on up to 10 computers at a time	
MT-DEV2-C25	–	25 user license – can be used on up to 25 computers at a time	
MT-DEV2-C50	–	50 user license – can be used on up to 50 computers at a time	

QH Series Motion Controllers

The QH Series Motion Controllers meet your needs for higher performance and smaller size. Ideal for 1.5 axes to 96 control axes. Various motion controller operating system software packages are also available. With increased high-speed motion, flexibility and compatibility of the Q Series Automation Platform, the QH Series Motion Controllers are the best choice for next-generation motion control technology!



Note-1: The PLC CPU for Multiple CPU can be used in Q-mode.
Note-2: The Motion CPU control module which can be accessed from the PLC CPU is only input module.
Note-3: The other CPU control module cannot be accessed from the Motion CPU.
Note-4: Only 1 personal computer can be connected via SSCNET.
Note-5: USB cannot be used in Windows NT® 4.0.
Note-6: The module installed in the QA1S6□B cannot be controlled in the Motion CPU.
Note-7: The external battery for backup of the parameter/program is required at the continuously power off for 1000 hours or more.
Refer to "SSCNET connecting method" for connection between the Motion CPU module and servo amplifier/external battery.

A. CPU Base Units / Power Supply Module / CPU Modules 203
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H. Operating / Programming Software 209

Ⓐ Q Series CPU Base Units

iQ Series Base Information

Model Number	Q38B-E	Q35B-E	Q38B-E	Q312B-E	Q63B	Q65B	Q68B	Q612B
Type	Base Unit				Extension Base Unit			
Specifications and Extension Connection Cables	See Q section of this PSG for detailed information and specifications							

Power Supply Modules

Model Number	Q61P-A1	Q61P-A2	Q62P	Q63P	Q64P
Specifications	See Q section of this PSG for detailed information and specifications				

Sequence CPU Modules

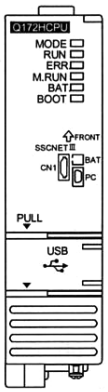
Model Number	Q00CPU	Q01CPU	Q02CPU	Q02HCPU	Q06HCPU	Q12HCPU	Q25HCPU
Specifications	See Q section of this PSG for detailed information and specifications						

Cables for CPU to Extension Base Unit or Extension Base Unit to Extension Base Unit

Model Number	QC05B	QC06B	QC12B	QC30B	QC50B	QC100B
Specifications	See Q section of this PSG for detailed information and specifications					

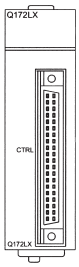
Ⓑ QH Series Motion Controller CPU Modules

Model Number		Q172HCPU (SSCNET III)	Q173HCPU (SSCNET III)
Stocked Item		S	S
Number of Control Axes		8 axes	32 axes
Operation Cycle (Default)	SV13	0.44ms / 1 to 3 axes 0.88ms / 4 to 8 axes	0.44ms / 1 to 3 axes 0.88ms / 4 to 10 axes 1.77ms / 11 to 20 axes 3.55ms / 21 to 32 axes
	SV22	0.88ms / 1 to 4 axes 1.77ms / 5 to 8 axes	0.88ms / 1 to 5 axes 1.77ms / 6 to 14 axes 3.55ms / 15 to 28 axes 7.11ms / 29 to 32 axes
Interpolation Functions		Linear interpolation (4 axes max.), circular interpolation (2 axes), Helical interpolation (3 axes)	
Control Modes		PTP (Point to Point) control, Speed control, Speed-position control, Fixed-pitch feed, Constant speed control, Position follow-up control, Speed switching control, High-speed oscillation control, Synchronous control (SV22)	
Acceleration/ Deceleration Control		Automatic trapezoidal acceleration/deceleration, S-curve acceleration/deceleration	
Compensation		Backlash compensation, electronic gear, phase compensation (SV22)	
Programming Language		Motion SFC, dedicated instruction, mechanical support language (SV22)	
Program Capacity		14k steps	
Number of Positioning Points		3200 points (Positioning data can be designated indirectly)	
Programming Tool		IBM PC/AT	
Peripheral I/F		USB / SSCNET III	
Home Position Return Function		Proximity DOG type (2 types), Count type (3 types), Data set type (2 types) DOG cradle type, Stopper type (2 types), Limit switch combined type (Home position return re-try function provided, home position shift function provided)	
JOG Operation Function		Provided	
Manual Pulse Generator Operation Function		Possible to connect 3 modules	
Synchronous Encoder		Possible to connect 12 modules	Possible to connect 8 modules
M-Code Function		M-code output function provided M-code completion wait function provided	
Limit Switch Output Function		Number of output points 32 point/axis. Watch data: Motion control data/Word device	
Absolute Position System		Made compatible by setting battery to servo amplifier. (Possible to select the absolute data method or incremental method for each axis)	
Number of SSCNET II I/F		—	—
Number of SSCNET III Systems		1 systems	2 system
Manual Pulse Generator/ Synchronous Encoder/ Servo External Signals Interface Module		Q172LX: 1 module usable Q172EX: 4 modules usable Q173PX: 3 modules usable (*1)	Q172LX: 4 modules usable Q172EX: 6 modules usable Q173PX: 4 modules usable (*1)
Internal Current		1.14	1.25
Dimensions (W x H x D) mm (inch)		27.4 x 104.6 x 114.3 (1.08 x 4.12 x 4.50)	
Weight (kg)		0.22	0.23



Note:
1. When using the incremental synchronous encoder by using SV22, you can use 4 modules. When connecting the manual pulse generator, you can use only one module.

C Special Function Modules



QH Series Servo External Signals Interface Module

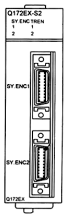
The Q172LX is assigned a set of input numbers per axis. The system setting of the positioning software package is used to determine the I/O numbers corresponding to the axis numbers.

Servo External Signal	Application	Number of Points
Upper Stroke Limit Input (FLS)	For detection of upper and lower stroke limits	32 points (4 points/8 axes)
Lower Stroke Limit Input (RLS)		
Stop Signal Input (STOP)	For stopping under speed or positioning control	
Proximity DOG/ Speed-Position Switching Input (DOG/CHANGE)	For detection of proximity DOG at proximity DOG or count type home position return or for switching from speed to position switching control.	

Note: Signal No. 1 to 8 can be assigned to the specified axis. To make the assignment, use the system settings of the positioning software package.

Model Number		Q172LX
Stocked Item		S
Number of Inputs		Servo external signals: 32 points (Upper stroke limit, Lower stroke limit, Stop input, Proximity DOG/Speed-position switching signal) (4 points x 8 axes)
Input Method		Sink/Source type
Isolation Method		Photocoupler
Rated Input Voltage		12/24 VDC
Rated Input Current		12 VDC 2mA/24 VDC 4mA
Operating Voltage Range		10.2 to 26.4 VDC (12/24 VDC +10/ -15%, ripple ratio 5% or less)
ON Voltage/Current		Min.10 VDC or more/2.0mA or more
OFF Voltage/Current		Max.1.8 VDC or less/0.18mA or less
Input Resistance		Approx. 5.6KΩ
Response time of the Upper/Lower Stroke Limit and STOP Signal	OFF to ON	1ms
	ON to OFF	
Response Time of the Proximity DOG, Speed-Position Switching Signal	OFF to ON	0.4ms/0.6ms/1ms (CPU parameter setting, Default 0.4ms)
	ON to OFF	
Common Terminal Arrangement		32 points/common (common terminal: B1, B2)
Indicates to Display		ON indication (LED)
External Connector Type		40 pin connector
Applicable Wire Size		0.3mm^2
Applicable Connector for the External Connection		A6CON1 (Attachment), A6CON2, A6CON3 (Optional)
Applicable Connector/ Terminal Block Converter Module		A6TBXY36, A6TBXY54, A6TBXY70 (Optional)
Number of I/O Occupying Points		32 points (I/O allocation: Intelligent, 32 points)
Internal Current Consumption (5VDC) [A]		0.05
Dimensions [mm (inch)] (W x H x D)		27.4 x 98 x 89.3 (1.08 x 3.86 x 3.52)
Weight (kg)		0.15

D QH Series Serial Absolute Synchronous Encoder and Interface Module



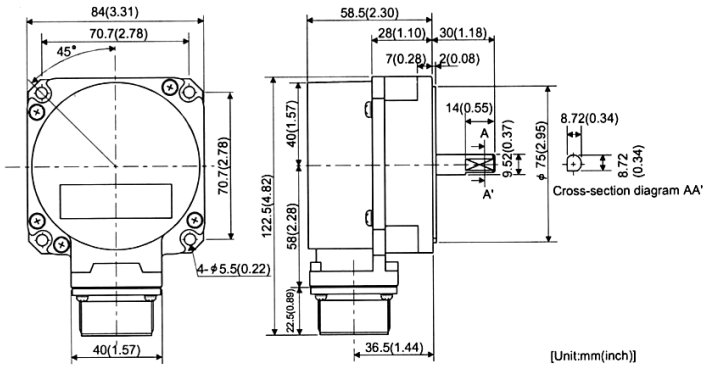
Tracking Enable Signal Input

Model Number		172EX-S2	Q172EX-S3
Stocked Item		S	–
Number of Inputs		Tracking enable signal: 2 points	
Input Method		Sink/Source type	
Isolation Method		Photocoupler	
Rated Input Voltage		12/24 VDC	
Rated Input Current		12 VDC 2mA/24 VDC 4mA	
Operating Voltage Range		10.2 to 26.4 VDC (12/24 VDC +10 / -15%, ripple ratio 5% or less)	
ON Voltage/Current		10 VDC or more/2.0mA or more	
OFF Voltage/Current		1.8 VDC or less/0.18mA or less	
Input Resistance		Approx. 5.6KΩ	
Response Time	OFF to ON	0.4ms/0.6ms/1ms (CPU parameter setting, Default 0.4ms)	
	ON to OFF		
Common Terminal Arrangement		1 point/common (Common terminal: TREN.COM)	
Display		ON indication (LED)	

Serial Absolute Synchronous Encoder I/F

Model Number	Q172EX-S2	Q172EX-S3
Applicable Signal Types	Differential-output type : (SN75C1168 or equivalent)	
Transmission Method	Serial communications	
Synchronous Method	Counter-clock-wise (viewed from end of shaft)	
Communication Speed	2.5 Mbps	
Applicable Types	Q170ENC	
Position Detection Method	Absolute (ABS) method	
Resolution	262144 PLS/rev (18bit)	
Number of Modules	2/module	
External Connector Type	20 pin connector	
Applicable Connector for the External Connection	Q170ENCCNS (Optional)	
Applicable Wire	MB14B0023 12 Pair	
Recommended Cables	Q170ENCCBL□M □= cable length 2m (6.56 ft.), 5m (16.4 ft.), 10m (32.81 ft.), 20m (65.62 ft.), 30m (98.43 ft.), 50m (164.04 ft.)] (Note)	
Cable Length	Up to 50m (164.04 ft.)	
Back up the Absolute Position	Depends on A6BAT/MR-BAT	
Battery Service Life Time (Value in Actual)	12000 [h], (Example of encoders x 2, ambient temperature 40°C (104°F)) 24000 [h], (Example of encoders x 1, ambient temperature 40°C (104°F))	
Memory of Data Exchange	None	Provided
Number of I/O Occupying Points	32 points (I/O allocation: Intelligent, 32 points)	
Internal Current Consumption (5VDC) [A]	0.19	
Dimensions [mm (inch)]	98 x 27.4 x 90 (3.86 x 1.08 x 3.54) H x W x D	
Weight [kg]	0.15	

Note: Use these cables when the tracking enable signal is not used. Customer must make a cable when the tracking enable signal is used.

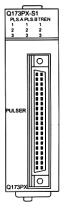


QH Series Synchronous Encoder (optional)

IModel Number	Q170ENC
Stocked Item	S
Resolution	262144 PLS/rev
Transmission Method	Serial Communications (Connected to Q172EX-S2/S3)
Direction on Increase	Counter clockwise (viewed from end of shaft)
Protective Construction (*1)	IP65 (dust proof, waterproof) except for the shaft-through portion
Permitted Speed at ON	3600 r/min
Permitted Speed at OFF (*2)	500 r/min
Permitted Axis Load	Radial load: Max 19.6N Thrust load: Max 9.8N
Runout at Input Shaft Tip	0.02 mm (0.00079 in) or less 15 mm (0.59 in) from tip
Recommended Coupling	Bellows coupling
Permissible Angular Acceleration	40,000 rad/s^2
Internal Current Consumption	0.2 (A)
Connecting Cable	Q170ENCCBL□M □ = cable length 2m (6.56 ft.), 5m (16.4 ft.), 10m (32.8 ft.), 20m (65.6 ft.), 30m (98.4 ft.), 50m (164.04 ft.)]
Communication Method	Differential driver/receiver conforming to RS-422A
Transmission Distance	Up to 50 m (164.04 ft)
Operating Temperature	-5°C to 55°C (23 to 131°F)
Weight kg (lbs)	0.6 (1.3)

Notes:
1. If an "o-ring" is required, please purchase separately.
2. If it exceeds a permitted speed at power OFF, a position displacement is generated.

E QH Series Manual Pulse Generator and Interface Module



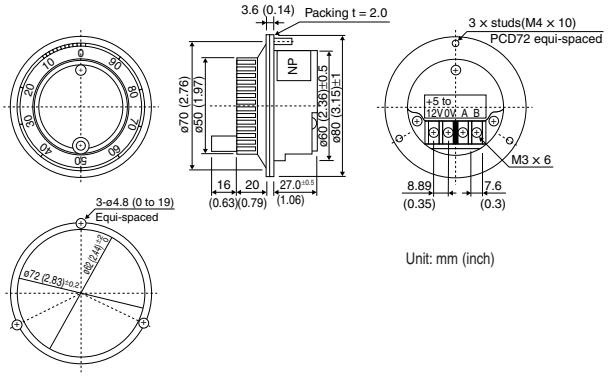
Tracking Enable Signal Input

Model Number	Q173PX-S1
Stocked Item	S
Number of Inputs	Tracking enable signal: 3 points
Input Method	Sink/Source type
Isolation Method	Photocoupler
Rated Input Voltage	12/24 VDC
Rated Input Current	12 VDC 2mA/24 VDC 4mA
Operating Voltage Range	10.2 to 26.4 VDC (12/24 VDC +10/ -15%, ripple ratio 5% or less)
ON Voltage/Current	10 VDC or more / 2.0 mA or more
OFF Voltage/Current	1.8 VDC or less / 0.18 mA or less
Input Resistance	Approx. 5.6KΩ
Common Terminal Arrangement	1 point/common (Common terminal: TREN.COM)
Display	ON indication (LED)

Manual Pulse Generator I/F

Model Number		Q173PX-S1
Stocked Item		S
Number of Modules (Max.)		3 per CPU
Voltage-output/ Open collector	High Voltage	3.0 to 5.25 VDC
	Low Voltage	0 to 1.0 VDC
Differential-output type (26LS31 or equivalent)	High Voltage	2.0 to 5.25 VDC
	Low Voltage	0 to 0.8 VDC
Input Frequency		Max. 200kpps (After magnification by 4)
Applicable Types		Voltage-output type/Open-collector type (5 VDC), Recommended product: MR-HDP01; Differential-output type: (26LS31 or equivalent)
External Connector Type		40 pin connector
Applicable Wire Size		0.3mm^2
Applicable Connector for the External Connection		A6CON1 (Attachment) A6CON2, A6CON3 (Optional)
Applicable Connector/ Terminal Block Converter Module		A6TBXY36, A6TBXY54, A6TBXY70 (Optional)
Cable Length	Voltage-Output/Open Collector Output Type	30m (98.43 ft.) (Open collector output type: 10m (32.81 ft.))
	Differential-Output Type	
Memory for Data Exchange		Provided
Number of I/O Occupying Points		32 points (I/O allocation: Intelligent, 32 points)
Internal Current Consumption		0.38
Dimensions [mm (inch)] H x W x D		98 x 27.4 x 90 (3.86 x 1.08 x 3.54)
Weight [kg]		0.15

Manual Pulse Generator

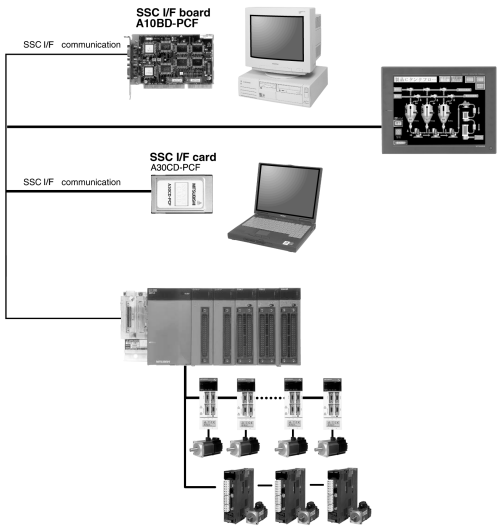


QH Series Manual Pulse Generator (optional)

Model Number	MR-HDP01
Stocked Item	S
Pulse Resolution Method	25 PLS/rev (100 PLS/rev at magnification of 4) Voltage - output (power supply voltage - 1V or more), Output current = Up to 20 mA
Power Supply Voltage	4.5 to 13.2 VDC
Consumption Current	60
Life	1,000,000 revolutions at 200 r/min
Permitted Axis Load	Radial load : Max. 19.6N; Thrust load : Max. 9.8N
Pulse Signal Status	2 signals: A phase, B: phase, 90° phase difference
Friction Torque	0.1N/m (at 20°C (68°F))
Operating Temperature	-10°C to +60°C (14°F to 140°F)
Weight kg (lbs)	0.4 (0.88)

Note: If using an external power supply, it needs to be 5 VDC.

F Peripheral Equipment



Operating Environment

Item	WindowsNT® 4.0 (Service Pack 2 or later) or Windows® 98	Windows® 2000	Windows® XP
CPU	Recommended Pentium® 133MHz or more	Recommended Pentium® II 233MHz or more	Recommended Pentium®II 450MHz or more
Memory Capacity	Recommended 32MB or more	Recommended 64MB or more	Recommended 192MB or more
Hard Disk Free Space	SW6RNC-GSVE: 333MB + SW6RNC-GSVHELPE: 155 MB (Possible to select installation)		
Display	SVGA (resolution 800 x 600 pixels, 256 colors) or more		
Application Software	Word 97, Excel 97 or Word 2000, Excel 2000 (For document printing) Visual C++ 4.0 or more, Visual Basic 4.03 (32 bit) or more (For communication API function)		

Note:
WindowsNT®, Windows®, Word, Excel, Visual C++ and Visual Basic are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Pentium® is a trademark or registered trademark of Intel Corporation or its subsidiaries in the United States and/or other countries.

Peripheral Equipment

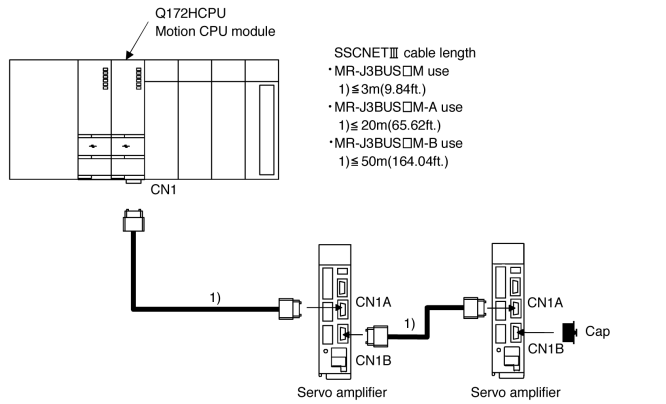
Model Number	Description	Stocked Item
A10BD-PCF	SSC I/F PCI slot board for PC	–
A30CD-PCF (Note)	SSC I/F PCMCIA card for laptop	S
HMI	Please select the HMI from the GOT1000/ E Series Human Machine Interfaces section in this Product Selection Guide	N/A

Note:
I/F card only – See Programming Software section model number MT-DEV-SET □□ for the complete I/F Kit. (Software, PCMCIA, Cable). When using the A30CD-PCF, the PC card driver for WindowsNT® provided by the personal computer manufacturer must be used.

G QH Misc Parts • Cables • Connectors • Manuals

QH Series • Q172HCPU

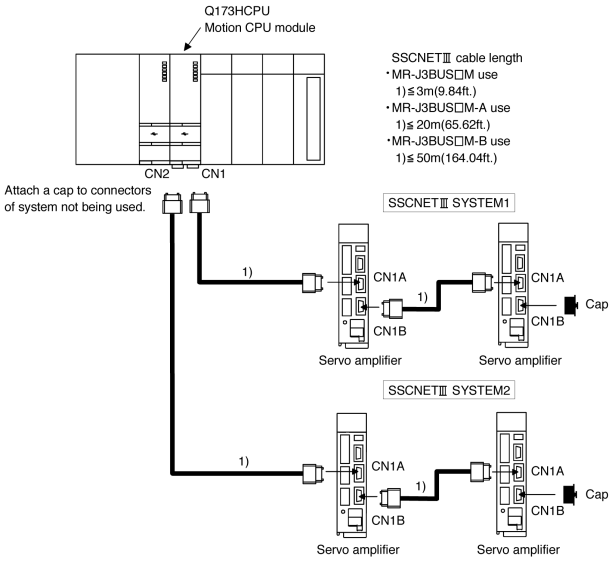
Connection between Q172HCPU and MR-J3-B servo amplifiers



(Note): It cannot communicate with that the connection of CN1A and CN1B is mistaken.

QH Series • Q173HCPU

Connection between Q173HCPU and MR-J3-B servo amplifiers



(Note): It cannot communicate with that the connection of CN1A and CN1B is mistaken.

Miscellaneous Parts for the System

Model Number	Description	Stocked Item
MR-BAT or A6BAT	Battery to be used with the Q173DV, Q170BAT or Q170ENC	S
Q6BAT	Battery for IC-RAM memory backup of the Q173HCPU/Q172HCPU module.	S
Q170HBATC	Battery holder for Q6BAT (Battery is not supplied, order Q6BAT separately)	S

Cables for Q172H/173HCPU (SSCNET III) to MR-J3-B Servo Amplifiers

Model Number	Description	Stocked Item
MR-J3BUS015M	0.15 meter SSCNET III (plastic) cable from Q172H/173HCPU to MR-J3-B Amplifier	S
MR-J3BUS03M	0.3 meter SSCNET III (plastic) cable from Q172H/173HCPU to MR-J3-B Amplifier	S
MR-J3BUS05M	0.5 meter SSCNET III (plastic) cable from Q172H/173HCPU to MR-J3-B Amplifier	S
MR-J3BUS1M	1 meter SSCNET III (plastic) cable from Q172H/173HCPU to MR-J3-B Amplifier	S
MR-J3BUS3M	3 meter SSCNET III (plastic) cable from Q172H/173HCPU to MR-J3-B Amplifier	S
MR-J3BUS5M-A	5 meter SSCNET III (plastic) cable from Q172H/173HCPU to MR-J3-B Amplifier	S
MR-J3BUS10M-A	10 meter SSCNET III (plastic) cable from Q172H/173HCPU to MR-J3-B Amplifier	S
MR-J3BUS20M-A	20 meter SSCNET III (plastic) cable from Q172H/173HCPU to MR-J3-B Amplifier	S
MR-J3BUS30M-B	30 meter SSCNET III (glass) cable from Q172/H173HCPU to MR-J3-B Amplifier	S
MR-J3BUS40M-B	40 meter SSCNET III (glass) cable from Q172H/173HCPU to MR-J3-B Amplifier	–
MR-J3BUS50M-B	50 meter SSCNET III (glass) cable from Q172H/173HCPU to MR-J3-B Amplifier	–

Connectors for Servo Amplifiers

Model Number	Description	Stocked Item
Connector Cap	Comes with 2 caps on the MR-J3-B amplifiers standard	–

Cables, Connectors and Parts for Special Function Modules

Model Number	Description	Stocked Item
A6CON1	Q173PX connector to use the manual pulse generator and incremental synchronous encoder or Q172LX connector to use the servo external input signals.	S
QD75MCBL-2M	2 meter I/O pigtail cable to use in place of the A6CON1 connector.	S
QD75MCBL-5M	5 meter I/O pigtail cable to use in place of the A6CON1 connector.	S
QD75MCBL-10M	10 meter I/O pigtail cable to use in place of the A6CON1 connector.	S
A6TBXY36	Q172LX Terminal Block Conversion Module - Sink Type Input/Output (Standard Type)	S
A6TBXY54	Q172LX Terminal Block Conversion Module - Sink Type Input/Output (2-wire Type)	–
AC05TB	0.5 meter cable from Q172LX to A6TBXY□□ Terminal Block Conversion Module	S
AC10TB	1 meter cable from Q172LX to A6TBXY□□ Terminal Block Conversion Module	S
AC20TB	2 meter cable from Q172LX to A6TBXY□□ Terminal Block Conversion Module	S
AC30TB	3 meter cable from Q172LX to A6TBXY□□ Terminal Block Conversion Module	S
AC50TB	5 meter cable from Q172LX to A6TBXY□□ Terminal Block Conversion Module	S
AC80TB	8 meter cable from Q172LX to A6TBXY□□ Terminal Block Conversion Module	–
AC100TB	10 meter cable from Q172LX to A6TBXY□□ Terminal Block Conversion Module	–
Q170ENCCNS	Connector set for the Q170ENC absolute synchronous encoder	–
Q170ENCCBL2M	2 meter cable from the Q172EX-S2/S3 to the Q170ENC absolute synchronous encoder	–
Q170ENCCBL5M	5 meter cable from the Q172EX-S2/S3 to the Q170ENC absolute synchronous encoder	–
Q170ENCCBL10M	10 meter cable from the Q172EX-S2/S3 to the Q170ENC absolute synchronous encoder	–
Q170ENCCBL20M	20 meter cable from the Q172EX-S2/S3 to the Q170ENC absolute synchronous encoder	–
Q170ENCCBL30M	30 meter cable from the Q172EX-S2/S3 to the Q170ENC absolute synchronous encoder	–
Q170ENCCBL50M	50 meter cable from the Q172EX-S2/S3 to the Q170ENC absolute synchronous encoder	–

Cables for Peripheral Equipment

Model Number	Description	Stocked Item
Q170BDCBL3M	3 meter cable for SSC I/F PCI slot board for PC	–
Q170BDCBL5M	5 meter cable for SSC I/F PCI slot board for PC	–
Q170BDCBL10M	10 meter cable for SSC I/F PCI slot board for PC	–
Q170CDCBL3M (Note)	3 meter cable for SSC I/F PCMCIA card for laptop	S
Q170CDCBL5M (Note)	5 meter cable for SSC I/F PCMCIA card for laptop	–
Q170CDCBL10M (Note)	10 meter cable for SSC I/F PCMCIA card for laptop	–

Note: I/F cable only – see programming software section model number MT-DEV-SET-C_ for the complete I/F kit. (software, PCMCIA card and cable)

Manuals

Model Number	Description	Stocked Item
IB(NA)0300110	Q172HCPU/Q173HCPU motion controller user's manual	–
IB(NA)0300111	Q172HCPU/Q173HCPU motion controller programming manual (Common)	–
IB(NA)0300112	Q172HCPU/Q173HCPU motion controller (SV13/SV22) programming manual (SFC)	–
IB(NA)0300113	Q172HCPU/Q173HCPU motion controller (SV13/SV22) programming manual (REAL)	–
IB(NA)0300114	Q172HCPU/Q173HCPU motion controller (SV22) programming manual (VIRTUAL)	–
SH(NA)030051	MR-J3-B servo amplifier instruction manual	S
SH(NA)030041	MR-J3 servo motor instruction manual	S

❻ Operating • Programming Software

MT Developer Software

Operating system software packages

Dedicated language

Motion SFC compatible

SV13 Conveyor assembly use

[Applications] Electronic component assembly, Inserter, Feeder, Molder, Conveying equipment, Paint applicator, Chip mounting, Wafer slicer, Loader/Unloader, Bonding machine, X-Y table

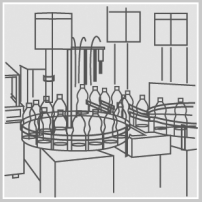
Linear interpolation (1 to 4 axes), Circular interpolation, Constant-speed, Fixed-pitch feed, Speed control with fixed position stop, Speed switching, Speed control, Speed/position switching

Motion SFC compatible

Automatic machinery use **SV22**

[Applications] Press feeder, Food processing, Food packaging, Winding machine, Spinning machine, Textile machine, Printing machine, Book binder, Tire molder, Paper-making machine

Synchronous control, Electronic shaft, Electronic clutch, Electronic cam, Draw control



Mechanical support language

QH Series Integrated Start-up Support Software Packages

Model Number	Description	Details
MT-DEV-PRO-□□ (*1)	SW6RNC-GSV-E (Integrated start-up support software)	Conveyor assembly software: SW6RN-GSV13P Automatic machinery software: SW6RN-GSV22P Cam data creation software: SW3RN-CAMP Digital oscilloscope software: SW6RN-DOSCP Communication system software: SW6RN-SNETP Document print software: SW3RN-DOCPRNP, SW20RN-DOCPRNP Help section: SW6RNC-GSVHELPE
	QH Series Q172HCPU (SSCNET III) Operating Software (OS)	SW6RN-SV13QM: For conveyor assembly
		SW6RN-SV22QL: For automatic machinery
	QH Series Q173HCPU (SSCNET III) Operating Software (OS)	SW6RN-SV13QK: For conveyor assembly
		SW6RN-SV22QJ: For automatic machinery
	Installation manual	
MT-DEV-SET-□□ (*1)	MT-DEV-PRO-□□ *	
	A30CD-PCF (SSC I/F card (PCMCIA TYPE II 1CH/card))	
	Q170CDCBL3M (A30CD-PCF cable 3m (9.84 ft.))	
MT-DEV-GXPRO-□□ (*1)	MT-DEV-PRO-□□ *	
	GX-DEV-C1 (GX Developer software)	
MT-DEV-GXSET-□□ (*1)	MT-DEV-SET-□□ *	
	GX-DEV-C1 (GX Developer software)	

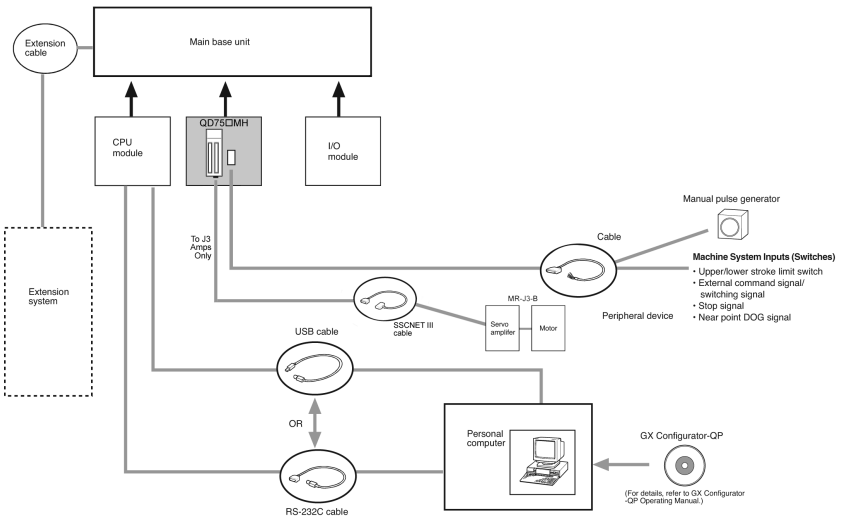
Note 1: Select the user license necessary.

Model Number	Description	Stocked Item
C1	Single user license – can be used on 1 computer at a time	S
C5	5 user license – can be used on up to 5 computers at a time	–
C10	10 user license – can be used on up to 10 computers at a time	–
C25	25 user license – can be used on up to 25 computers at a time	–
C50	50 user license – can be used on up to 50 computers at a time	–

QD75MH Positioning Modules for QH Series Automation Platform

One of Q Series' strengths is the ability to integrate motion control directly onto your system. If a Q Series motion CPU is not required the QD75MH positioning modules provide a range of alternative motion control capabilities. The QD75MH is connected to MR-J3-B servo amplifiers by means of the Servo System Control Network (SSCNET III). This allows compatibility with absolute position systems, between the QD75MH and servo amplifiers (overall distance of 30 meters). Key features include: one, two and four axis versions available; 1MHz output capacity; Support up to 256 axes; 4 axis linear interpolation; Circular interpolation; variety of control schemes (point to point, fixed feed, speed, speed/position & position/speed).

System Configuration



QD75MH Parts List

MODEL NUMBER	Description	Stocked Item
QD75MH1	SSCNET III Single axis motion controller for Q Series Automation Platform	S
QD75MH2	SSCNET III Dual axis motion controller for Q Series Automation Platform	S
QD75MH4	SSCNET III 4 axis motion controller for Q Series Automation Platform	S
GX-CONFIG-QP-C1	Programming software for QD75M and QD75MH motion modules	S
MR-HDP01	Optional manual pulse generator	S
CABLES AND ACCESSORIES		
A6CON1	Spare I/O connector, solder type	S
A6CON2	Spare I/O connector, crimp type	S
A6CON3	Spare I/O connector, IDC type	S
A6CON4	Spare I/O connector, low profile type	–
QD75MCBL-2M	I/O cable – pigtail (order 2 for QD75M4 or QD75MH4) 2 meter	S
QD75MCBL-5M	I/O cable – pigtail (order 2 for QD75M4 or QD75MH4) 5 meter	S
QD75MCBL-10M	I/O cable – pigtail (order 2 for QD75M4 or QD75MH4) 10 meter	S
MR-J3BUS015M	SSCNET III (plastic) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 0.15 meter	S
MR-J3BUS03M	SSCNET III (plastic) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 0.3 meter	S
MR-J3BUS05M	SSCNET III (plastic) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 0.5 meter	S
MR-J3BUS1M	SSCNET III (plastic) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 1 meter	S
MR-J3BUS3M	SSCNET III (plastic) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 3 meter	S
MR-J3BUS5M-A	SSCNET III (plastic) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 5 meter	S
MR-J3BUS10M-A	SSCNET III (plastic) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 10 meter	S
MR-J3BUS20M-A	SSCNET III (plastic) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 20 meter	S
MR-J3BUS30M-B	SSCNET III (glass) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 30 meter	S
MR-J3BUS40M-B	SSCNET III (glass) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 40 meter	–
MR-J3BUS50M-B	SSCNET III (glass) cable (QD75MH to MR-J3-B) and (MR-J3-B to MR-J3-B) 50 meter	–
MANUALS		
IB(NA)66900	GX-CONFIG-QP-C1 software operating manual	–
IB(NA)0300117	QD75MH user manual (details)	–
IB(NA)0300099	QD75MH user manual (hardware)	–

Note: Please refer to the Servomotor and Amplifiers Section in this Product Selection Guide to select servo amplifier and motor model numbers.

QD75MH Performance Specifications

Model Number		QD75MH1	QD75MH2	QD75MH4
No. of Control Axes		1 Axis	2 Axis	4 Axis
Interpolation Function		None	2-axis linear interpolation 2-axis circular interpolation	2-, 3-, or 4-axis linear interpolation 2-axis circular interpolation
Control System		PTP (Point To Point) control, path control (both linear and arc can be set), speed control, speed position switching control, position-speed switching control		
Control Unit		mm, inch, degree, PLS		
Positioning Data		600 data (positioning data Nos. 1 to 600)/axis (Can be set with peripheral device or PLC program.)		
Backup		Parameters, positioning data, and block start data can be saved on flash ROM (battery-less backup)		
Positioning	Positioning System	PTP control: Incremental system/absolute system Speed-position switching control: Incremental system/absolute system (*1) Position-speed switching control: Incremental system Path control: Incremental system/absolute system		
	In Absolute System	–214748364.8 to 214748364.7 (µm) • –21474.83648 to 21474.83647 (inch) 0 to 359.99999 (degree) • –2147483648 to 2147483647 (PLS)		
	In incremental System	–214748364.8 to 214748364.7 (µm) • –21474.83648 to 21474.83647 (inch) –21474.83648 to 21474.83647 (degree) • –2147483648 to 2147483647 (PLS)		
	In Speed-Position Switching Control (INC mode) / Position-Speed Switching Control	0 to 214748364.7 (µm) • 0 to 21474.83647 (inch) 0 to 21474.83647 (degree) • 0 to 2147483647 (PLS)		
	In Speed-Position Switching Control (ABS Mode) (*1) Positioning Range	0 to 359.99999 (degree)		
	Speed Command	0.01 to 20000000.00 (mm/min) • 0.001 to 2000000.000 (inch/min) 0.001 to 2000000.000 (degree/min) (*3) • 1 to 50000000 (PLS/s)		
	Acceleration/ Deceleration Process	Automatic trapezoidal acceleration/deceleration, S-pattern acceleration/deceleration		
	Acceleration/ Deceleration Time	1 to 8388608 (ms) Four patterns can be set for each of acceleration time and deceleration time		
	Sudden Stop Deceleration Time	1 to 8388608 (ms)		
Starting Time (ms) (*2)		1-axis linear control: 3.5 1-axis speed control: 3.5 2-axis linear interpolation control (Composite speed): 4.0 2-axis linear interpolation control (Reference axis speed): 4.0 2-axis circular interpolation control: 4.0 2-axis speed control: 3.5 3-axis linear interpolation control (Composite speed): 4.0 3-axis linear interpolation control (Reference axis speed): 4.0 3-axis speed control: 3.5 4-axis linear interpolation control: 4.0 4-axis speed control: 4.0		**Factors in starting time extension** The following times will be added to the starting time in the described conditions: • S-pattern acceleration/ deceleration is selected: 0.5 • Other axis is in operation: 1.5 • During continuous positioning control: 0.2 • During continuous path control: 1.0
External Wiring Connection System		40-pin connector		
Applicable Wire Size		0.3 mm² (when A6CON1 and A6CON4 are used), AWG#24 to 28 (when A6CON2 is used), AWG#28 (twisted)/AWG#30 (single wire) (when A6CON3 is used)		
Applicable Connector for External Device		A6CON1, A6CON2, A6CON3, A6CON4 (sold separately)		
SSCNET III Cable		MR-J3BUS□□M (*4)	• Connection between QD75MH and MR-J3-□ □B. • Connection between MR-J3-□ □B and MR-J3-□ □B. • Standard code for inside panel. • 0.15m (0.49ft.), 0.3m (0.98ft.), 0.5m (1.64ft.), 1m (3.28ft.), 3m (9.84ft.)	
		MR-J3BUS□□M-A (*4)	• Connection between QD75MH and MR-J3-B. • Connection between MR-J3--□ □B and MR-J3--□ □B. • Standard code for outside panel. • 5m(16.40ft.), 10m (32.81ft.), 20m (65.62ft.)	
		MR-J3BUS□□M-B (*4)	• Connection between QD75MH and MR-J3-□ □B. • Connection between MR-J3-□ □B and MR-J3-□ □B. • Long distance cable. • 30m (98.43ft.), 40m (131.23ft.), 50m (164.04ft.)	
SSCNET III Cable Overall Length (m)		50	50	50
Internal Current Consumption (5VDC)		QD75MH1 : 0.60A	QD75MH2 : 0.60A	QD75MH4 : 0.60A
Flash ROM Write Count		Max. 100000 times		
No. of Occupied I/O Points (Points)		32 (I/O assignment: 32 points for intelligent function module)		
Dimensions (mm (inch))		98 (3.86) (H) x 27.4 (1.08) (W) x 90 (3.54) (D)		
Weight kg (lbs)		0.15 (0.33)		

Notes:

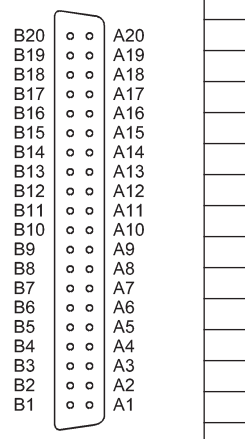
1. In speed-position switching control (ABS mode), the control unit available is "degree" only. (For details, refer to "Section 9.2.17 Speed position switching control (ABS mode)".)
2. Using the "Pre-reading start function", the virtual start time can be shortened. (For details, refer to "Section 12.7.8 Pre-reading start function".)
3. When "Speed control 10 x multiplier setting for degree axis function" is valid, this will be the setting range 0.01 to 20000000.00 (degree/min).
4. □ □ = Cable length. (015: 0.15m (0.49ft.), 03: 0.3m (0.98ft.), 05: 0.5m (1.64ft.), 1: 1m (3.28ft.), 3: 3m (9.84ft.), 5: 5m (16.40ft.), 10: 10m (32.80ft.), 20: 20m (65.62ft.), 30: 30m (98.43ft.), 40: 40m (131.23ft.), 50: 50m (164.04ft.))

QD75MH Input/Output (X/Y) Comparisons

Input (X)	
Name	**QD75MH□**
(QD75) READY	X00
Axis 1 Start Complete	X10
Axis 2 Start Complete	X11
Axis 3 Start Complete	X12
Axis 4 Start Complete	X13
Axis 1 BUSY	X0C
Axis 2 BUSY	X0D
Axis 3 BUSY	X0E
Axis 4 BUSY	X0F
Axis 1 Positioning Complete	X14
Axis 2 Positioning Complete	X15
Axis 3 Positioning Complete	X16
Axis 4 Positioning Complete	X17
Axis 1 Error Detection	X08
Axis 2 Error Detection	X09
Axis 3 Error Detection	X0A
Axis 4 Error Detection	X0B
Axis 1 M Code ON	X04
Axis 2 M Code ON	X05
Axis 3 M Code ON	X06
Axis 4 M Code ON	X07
Synchronization Flag	X01
Use Prohibited	X02, X03, X18 to X1F

Output (Y)	
Name	**QD75MH□**
Axis 1 Positioning Start	Y10
Axis 2 Positioning Start	Y11
Axis 3 Positioning Start	Y12
Axis 4 Positioning Start	Y13
Axis 1 STOP	Y04
Axis 2 STOP	Y05
Axis 3 STOP	Y06
Axis 4 STOP	Y07
All Axis Servo ON	Y01
Axis 1 Forward Run JOG Start	Y08
Axis 1 Reverse Run JOG Start	Y09
Axis 2 Forward Run JOG Start	Y0A
Axis 2 Reverse Run JOG Start	Y0B
Axis 3 Forward Run JOG Start	Y0C
Axis 3 Reverse Run JOG Start	Y0D
Axis 4 Forward Run JOG Start	Y0E
Axis 4 Reverse Run JOG Start	Y0F
PLC READY	Y00
Axis 1 Execution Prohibition Flag	Y14
Axis 2 Execution Prohibition Flag	Y15
Axis 3 Execution Prohibition Flag	Y16
Axis 4 Execution Prohibition Flag	Y17
Use Prohibited	Y02, Y03, Y18 to Y1F

Pin Layout	**QD75MH□**			
	Axis 2 (AX2)		**Axis 1 (AX1)**	
	Pin No.	**Signal Name**	**Pin No.**	**Signal Name**
	1B20	PULSER B–	1A20	PULSER B+
	1B19	PULSER A–	1A19	PULSER A+
	1B18	No connect	1A18	No connect
	1B17	No connect	1A17	No connect
	1B16	No connect	1A16	No connect
	1B15	5V	1A15	5V
	1B14	SG	1A14	SG
	1B13	No connect	1A13	No connect
	1B12	No connect	1A12	No connect
	1B11	No connect	1A11	No connect
	1B10	No connect	1A10	No connect
	1B9	No connect	1A9	No connect
	1B8	EMI.COM	1A8	EMI
	1B7	COM	1A7	COM
	1B6	COM	1A6	COM
	1B5	CHG	1A5	CHG
	1B4	STOP	1A4	STOP
	1B3	DOG	1A3	DOG
	1B2	RLS	1A2	RLS
	1B1	FLS	1A1	FLS



Front view of the module

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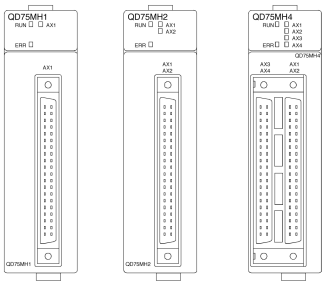


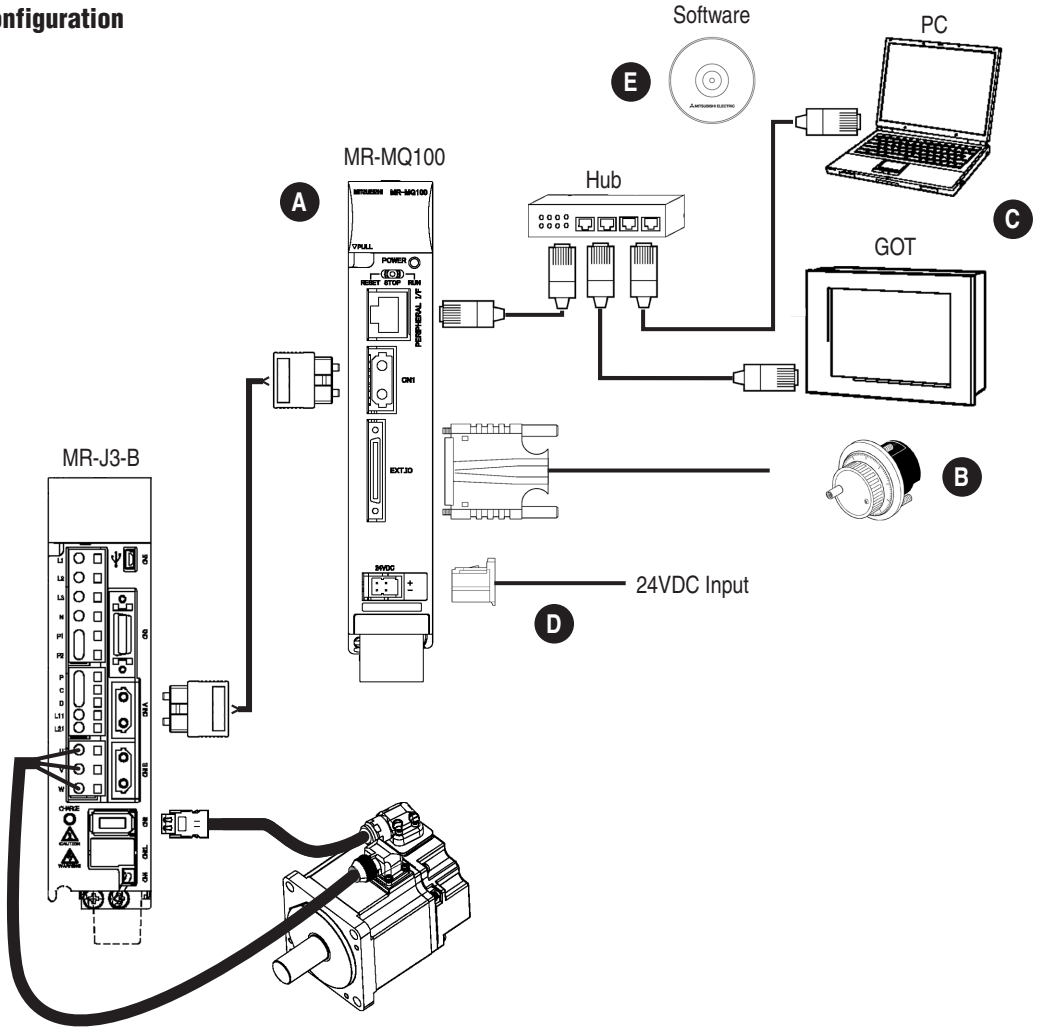
Notes:

1. The pin arrangement of the axis 3 (AX3)/axis 4 (AX4) of QD75MH□□ and QD75M□□ is the same.

MR-MQ100 – Single Axis Motion Controller

The MR-MQ100 was designed to be the performance leader for single axis and 1.5 axis control. Combined with the speed and accuracy of the SSCNETIII fiber optic communication network as well as the power of the MR-J3-B series servo amplifiers, machines can now perform at higher production levels where applications involving rotary cut, flying saw, labeling operation and other high speed applications are required. Intuitive software makes implementation of encoder following, CAM profiles, registration mark synchronization and even servo axis tuning very easy and quick.

System Configuration



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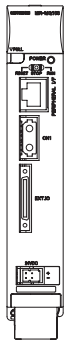
D. Cables/Connectors/Manuals 215
E. Software 216

Ⓐ MR-MQ100 Motion Controller

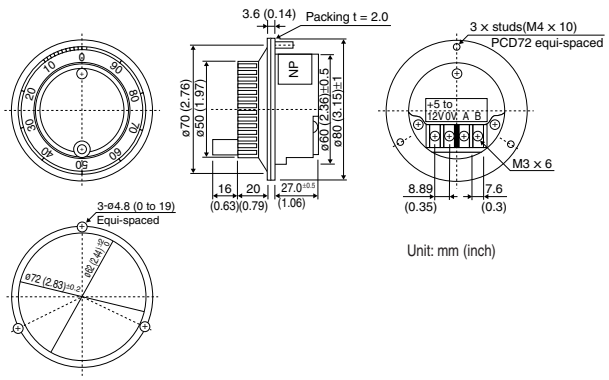


Single Axis Motion Controller (Connectors and OS included)

Model Number		MR-MQ100
Stocked Item		S
Power Supply		24VDC ±10% (Required Current Capacity 400mA)
Mass kg (lb)		0.7 (1.54)
Dimensions (mm) H x W x D		178 x 30 x 135
Digital Inputs (Mark Sensors)		4 inputs (24VDC), up to 30µs
Digital Outputs		2 outputs (24VDC), up to 1ms
Synchronous Encoder	Signal Type	A/B phase pulse train input, differential line driver or open collector
	Voltage Output / Open Collector Type 5 VDC	Up to 800kpps (After magnification by 4), up to 10m
	Differential-Output Type	Up to 4Mpps (After magnification by 4), up to 30m
Peripheral Interface		100 Mpbs/10Mpbs Ethernet (for programming and additional operation)
Number of Control Axis		1 axis
Operation Cycle		0.44ms
Servo Amplifier		MR-J3B servo amplifier (over SSCNETIII)
Programmable Language		Motion SFC, dedicated instruction, mechanical support language (SV22)
Memory Back-Up		Q6BAT
Cam Function	Number of Cams	Up to 256 cam profiles may be stored internally
	Resolution Per Cycle	256, 512, 1024, 2048
	Stroke Resolution	32,767
	Control Mode	Two-way cam, feed cam

Ⓑ Manual Pulse Generator

Manual Pulse Generator



Manual Pulse Generator 25ppr (optional)

Model	MR-HDP01
Stocked Item	S
Pulse Resolution	25 PLS/rev (100 PLS/rev at magnification of 4)
Output Method	Voltage - output (power supply voltage - 1V or more), Output current = Up to 20 mA
Power Supply Voltage	4.5 to 13.2 VDC
Consumption Current	60
Life	1,000,000 revolutions at 200 r/min
Permitted Axis Load	Radial load : Max. 19.6N Thrust load : Max. 9.8N
Pulse Signal Status	2 signals: A phase, B: phase, 90° phase difference
Friction Torque	0.1N/m (at 20°C (68°F))
Operating Temperature	-10°C to +60°C (14°F to 140°F)
Weight kg (lbs)	0.4 (0.88)

Note: If using an external power supply, it needs to be 5 VDC.

Ⓒ Peripheral Equipment

HMI's Available to Connect to the MR-MQ100

Model	Description	Stocked Item
GT1595 Series	15" XGA – TFT Color LCD – 65,536 colors	(*1)
GT1585 Series	12.1" SVGA – TFT Color LCD – 65,536 colors	(*1)
GT1572 Series	10.4" VGA – TFT Color LCD – 16 colors	(*1)
GT1575 Series	10.4" VGA/SVGA – TFT Color LCD – 256/65,536 colors	(*1)
GT1562 Series	8.4" VGA – TFT Color LCD – 16 colors	(*1)
GT1565 Series	8.4" VGA – TFT Color LCD – 65,536 colors	(*1)
GT1550 Series	5.7" QVGA – STN Monochrome LCD – 16 gray scales	(*1)
GT1555 Series	5.7" QVGA/VGA – STN/TFT Color LCD – 4096/65,536 colors	(*1)

***Note 1:** For more information on HMI's please refer to page Human Machine Interface section in this catalog.

Servo Amplifiers Available to Connect to the MR-MQ100

Model	Description	Stocked Item
MR-J3-B Series	Advanced SSCNETIII optical communication interface	(*1)
MR-J3-B-RJ006 Series	Fully closed loop control SSCNETIII optical communication interface	(*1)
MR-J3-B-RJ004 Series	Linear Servo using SSCNETIII optical communication interface	(*1)

***Note 1:** For more information on Servo Systems please refer to the Servomotors and Amplifiers section in this catalog.

Replacement Batteries for MR-MQ100

Model Number	Description	Stocked Item
Q6BAT	Battery, replacement for memory back-up	S
Q7BAT	Battery, high capacity replacement for memory back-up	S

Ⓓ Cables • Connectors • Manuals

Cables and Connectors for MR-MQ100

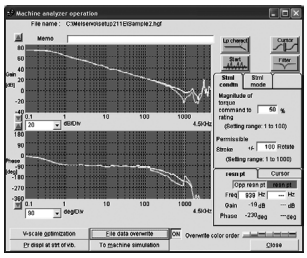
Model Number	Description	Stocked Item
MR-J3BUS015M	SSCNET III cable, 0.15 meter	S
MR-J3BUS03M	SSCNET III cable, 0.3 meter	S
MR-J3BUS05M	SSCNET III cable, 0.5 meter	S
MR-J3BUS1M	SSCNET III cable, 1 meter	S
MR-J3BUS3M	SSCNET III cable, 3 meter	S
MR-J3BUS5M-A	SSCNET III cable, 5 meter	S
MR-J3BUS10M-A	SSCNET III cable, 10 meter	S
MR-J3BUS20M-A	SSCNET III cable, 20 meter	S
MR-J3BUS30M-B	SSCNET III cable, 30 meter	S
MR-J3BUS40M-B	SSCNET III cable, 40 meter	—
MR-J3BUS50M-B	SSCNET III cable, 50 meter	—
MR-MQEXTCBL-3M	Cable for EXT I/O connector on MR-MQ100, 3 meter	S
MR-MQPWRCBL-3M	Cable for 24VDC power to MR-MQ100, 3 meter	S
EXT I/O Connector	50 pin solder connector for the EXT I/O connector	Included with MR-MQ100 Module
24VDC Connector	24VDC connector and pins for the power input	Included with MR-MQ100 Module

Manual for MR-MQ100

Model Number	Description	Stocked Item
IB(NA)0300150	MR-MQ100 User's Manual (Details)	meau.com

E Software

MR-Configurator (MRZJW3-SETUP221E)



This software makes it easy to perform setup, tuning, monitor display, diagnostics, reading and writing of parameters, and test operations with a personal computer. User-satisfying functions that enable the balance with the machine system, optimum control and short start up time are available.

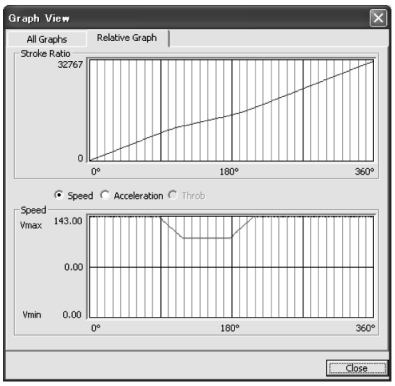
1. This software can set up and tune your servo system easily with a personal computer.
2. Multiple monitor functions
   Graphic display functions are provided to display the servo motor status with the input signal triggers, such as the command pulse, droop pulse and speed.
3. Test operations with a personal computer
   Test operation of the servo motors can be performed with a personal computer using multiple test mode menus.
4. Further advanced tuning is possible with the improved advanced functions.

Note:
MR-Configurator CD Version 7.00A and higher or MRZJW3-SETUP221E Version C1 and higher must be used with MR-J3-B series amplifiers when using MR-MQ100 motion controller.

Description	Model Number	Stocked Item
Windows Communication Software	MR-CONFIGURATOR	S
Communication Cable	MR-J3USBCBL3M	S

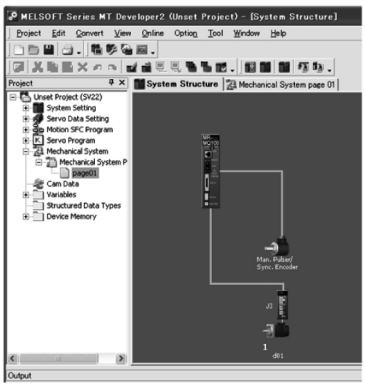
MT-Developer2-MQ Software (SW1DNC-MTW2MQ-E)

CAM function



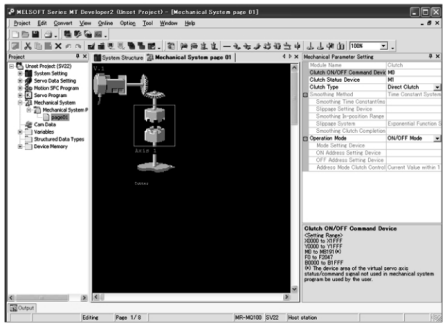
Easy to use menu and graphical interfaces.

System setting

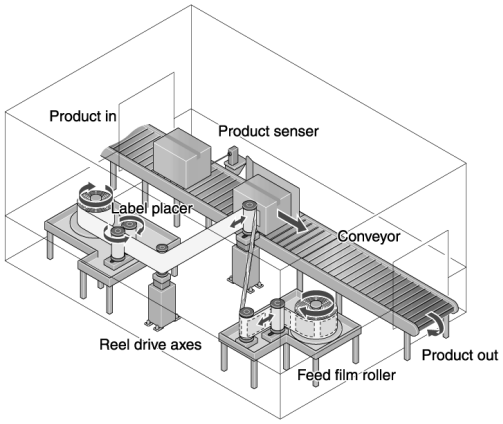


Compatible with all MR-J3B amplifiers for access to time saving functions like Model Adaptive Tuning, Real Time Auto-Tuning and Auto Gain Finding.

Mechanical support language



Mechanical Support Language for drag-and-drop creation of electronic clutches, gears and CAMs.



Suitable for many applications such as flying saw, labeling, rotary cut and more.

MT-Developer2-MQ Software

Model Number	Description	Stocked Item
MT-DEV2-MQ-C1	Software for MR-MQ100 Only (1 User License)	S
MT-DEV2-MQ-C5	Software for MR-MQ100 Only (5 User License)	—
MT-DEV2-MQ-C10	Software for MR-MQ100 Only (10 User License)	—
MT-DEV2-MQ-C25	Software for MR-MQ100 Only (25 User License)	—
MT-DEV2-MQ-C50	Software for MR-MQ100 Only (50 User License)	—
MT-DEV2-MQ-C100	Software for MR-MQ100 Only (100 User License)	—